U.S. Department of Energy

National Energy Technology Laboratory

OCT 31 2003

MEMORANDUM FOR DISTRIBUTION

FROM: RITA A. BAJURA
DIRECTOR, NATIONAL ENERGY TECHNOLOGY LABORATORY

SUBJECT: Environmental Impact Statement Determination for Implementing the Office of Fossil Energy's Carbon Sequestration Program

The National Energy Technology Laboratory (NETL) has determined, following review against the National Environmental Policy Act (NEPA) Implementing Procedures, that preparation of a Programmatic Environmental Impact Statement (PEIS) constitutes the appropriate level of environmental review for implementing the Sequestration Program.

For the Sequestration Program, the Department of Energy (DOE) has established a long-term performance goal to develop technologies that result in less than 10 percent increase in the cost of new energy services to separate, capture, transport, and sequester carbon-based greenhouse gases using direct or indirect systems. To progress toward achieving the DOE goal, the Office of Fossil Energy (FE)/NETL, as the implementing organization for the Sequestration Program, has identified the following categories of work for application of funds appropriated to support project activities under the Sequestration Program:

- Infrastructure Development and Carbon Sequestration Through Restoration of Unproductive and Productive Lands
- Early Entrance, Value Added, Carbon Capture and Storage in Depleting Oil and Gas Reservoirs and Deep Unmineable Coal Seams
- Advanced Carbon Capture and Sequestration from Power Plants and Other Energy Plants
- Advanced Technologies for Non-CO_2 Greenhouse Gas Mitigation

The purpose of the Sequestration Program is to develop a portfolio of cost effective, commercially ready, and environmentally benign technology options that could ultimately lead to a reduction in greenhouse gas intensity and stabilization of overall atmospheric concentrations of carbon dioxide. The PEIS will provide the framework and basis for future decisions on implementing activities within the Sequestration Program.

A copy of the EIS Determination for the proposed action is attached. Please direct any questions regarding this Determination to Lloyd Lorenzi at (412)386-6159.

Attachment

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Original to NEPA File (451.1)

ENVIRONMENTAL IMPACT STATEMENT DETERMINATION

In accordance with authorities delegated to me pursuant to Section 5(a)(8) of Department of Energy Order 451.1B, National Environmental Policy Act (NEPA) Compliance Program, and based on supporting analyses and recommendations by my staff, I have determined that preparation of a Programmatic Environmental Impact Statement (PEIS) constitutes the appropriate level of review and documentation for the following action:

A. Proposed Action

Title: Implementation of the Office of Fossil Energy's Carbon Sequestration Program

B. Description of Proposed Action

In February 2002, the President established a Global Climate Change Initiative that contained a core objective for the United States to reduce the intensity of greenhouse gas emissions (that is, the level of emissions per unit of economic output) by 18% over 10 years. The President's Initiative included support for climate change research to establish the technology base that could potentially be needed to address climate change problems. During this same time period, the Department of Energy (DOE) established, as the goal for the carbon sequestration activities being implemented by the Office of Fossil Energy (FE), a long-term, research and development objective to develop technologies that result in less than 10 percent increase in the cost of new energy services to separate, capture, transport, and sequester carbon-based greenhouse gases using direct or indirect systems. The activities implemented to address that goal constitute the Carbon Sequestration Program (Sequestration Program), which is implemented for FE by the National Energy Technology Laboratory (NETL).

To progress toward achieving the DOE goal of developing effective and cost-efficient sequestration technologies, FE and NETL have identified the following categories of research, development, and demonstration activities for application of funds appropriated to support the Sequestration Program:

- Infrastructure Development and Carbon Sequestration Through Restoration of Unproductive and Productive Lands
- Early Entrance, Value Added, Carbon Capture and Storage in Depleting Oil and Gas Reservoirs and Deep Unmineable Coal Seams
- Advanced Carbon Capture and Sequestration from Power Plants and Other Energy Plants
- Advanced Technologies for Non-CO_2 Greenhouse Gas Mitigation

The purpose of the Sequestration Program is to develop a portfolio of cost effective, commercially ready, and environmentally benign technology options that could ultimately lead to a reduction in greenhouse gas intensity and stabilization of overall atmospheric concentrations of carbon dioxide (CO_2). The PEIS will provide the framework and basis for future decisions on implementing activities within the Sequestration Program.

The PEIS will address the current state of affairs concerning greenhouse gas emissions and their sources; the potential problems resulting from greenhouse gas emissions; and the role of the Sequestration Program in addressing those problems on a national and global scale. Current and potential future initiatives within the Sequestration Program, including field tests; regional partnerships for CO_2 sequestration; research, development, and demonstration for CO_2 capture and carbon sequestration; measurement, monitoring, and verification; and non-CO_2 greenhouse gas mitigation, will be identified and considered in the PEIS. The PEIS will clearly establish the purpose, scope, and objectives of initiatives under the Program; identify and evaluate the mechanics, methods, information dissemination, and target objectives of initiatives and subordinate activities; and analyze the potential environmental consequences of Program initiatives, work categories, and potential activities.

C. Alternatives

Alternatives to be covered in the PEIS will include the range of reasonable alternatives available to achieve the technology development goals established by DOE for the Carbon Sequestration Program. Included among the alternatives will be the four categories research, development, and demonstration activities for (1) sequestration through restoration of unproductive and productive lands, (2) capture and storage in depleting oil and gas reservoirs and deep unmineable coal seams, (3) advanced capture and sequestration from power plants and other energy plants, and (4) advanced technologies for non-CO_2 greenhouse gas mitigation.

Alternative sequestration technologies that could achieve the Carbon Sequestration Program goals and support system alternatives that would be required for implementing an effective Carbon Sequestration Program will be addressed in the PEIS. These alternatives would include technology-related projects and potential breakthrough concepts for CO_2 capture and carbon sequestration; measurement, monitoring, and verification; and non-CO_2 greenhouse gas mitigation. The scope of the PEIS would include regional carbon sequestration partnership activities and large-scale field tests.

The no-action alternative, under which DOE would not provide funds for implementing the Carbon Sequestration Program, would also be considered in the PEIS. The PEIS will also consider other reasonable alternatives identified during the public scoping period.

D. Scoping Activities

Internal scoping activities to identify significant issues associated with implementing the Carbon Sequestration Program included examining the purpose of the Sequestration Program, categories of technology development work considered appropriate to address sequestration goals, technology options with potential for carbon capture and sequestration, the widespread nature of energy system carbon sources that could potentially be candidates for carbon capture and sequestration, and the support systems needed for effective sequestration. Federal actions that contain elements of carbon sequestration activity, but which are initiated under separately funded programs or as independent initiatives, will be considered only to the extent that those actions could potentially affect decisions resulting from this PEIS.

Scoping activities to date have included internal discussions of existing and potential future activities within the Carbon Sequestration Program and reviews of existing Federal and non-Federal activities for carbon sequestration.

E. Summary of Key Environmental Considerations for the PEIS

- Potential benefits from reductions of CO_2 emissions into the atmosphere
- Methods of accounting for the amounts of carbon that are sequestered
- Viability of long-term, permanent storage of CO_2
- Geographical diversity and expanse covered by carbon sources potentially available for capture and sequestration
- Resource utilization for carbon capture
- Infrastructure needs, land use, land development, and land restoration resulting from carbon capture, delivery, and storage activities
- Potential benefits of enhanced oil recovery and recovery of coalbed methane from oil and gas reservoirs and unmineable coal seams
- Safety and health concerns associated with carbon storage
- Ecological impacts on vegetation, terrestrial and aquatic wildlife, threatened and endangered species, and ecologically sensitive resources from carbon storage and sequestration
- Industrial changes to achieve efficient capture and storage of carbon
- Cumulative environmental impacts

F. Determination

Based upon the scope of the proposed Carbon Sequestration Program, the potential for widespread consideration and application of carbon capture and sequestration technologies, and the potential need for geographically and technologically diverse field tests of approaches to carbon sequestration, I have determined that the proposed action for implementing the Office of Fossil Energy's Carbon Sequestration Program is one for which a PEIS would be the appropriate level of review under DOE's NEPA Implementing Procedures.

Federal, state, and local agencies, non-government organizations, and the public will be notified of our intention to prepare a PEIS and will be included among those parties that will be provided the opportunity for involvement in establishing the scope of the environmental review and in developing the environmental analysis prior to final decision-making. All input received through public participation processes will be considered in our environmental analysis and in the development of a final PEIS, which will provide the environmental basis for DOE's decision on implementing the proposed action.

Rita A. Bajura
Director
National Energy Technology Laboratory

6/30/03
Date